Check List the journal of biodiversity data

NOTES ON GEOGRAPHIC DISTRIBUTION

Check List 12(1): 1844, 19 February 2016 doi: http://dx.doi.org/10.15560/12.1.1844
ISSN 1809-127X © 2016 Check List and Authors

First records of *Rhamdella longiuscula* from Argentina and new localities for *Rhamdella cainguae* (Siluriformes: Heptapteridae)

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Abstract: The genus *Rhamdella* is considered to be composed of six species but only *R. aymarae* and *R. cainguae* have been recorded from Argentina. Information on the distributions of these species is scarce and *R. cainguae* is only known from its type locality. This note documents a wider distribution range of *R. cainguae* and reports *R. longiuscula* in Argentina for the first time.

Key words: Misiones; Paraná River basin; Uruguay River basin; range extension

The genus *Rhamdella*, established by Eigenmann & Eigenmann, 1888 as a subgenus of *Rhamdia* (Bleeker, 1858), is currently a genus belonging to the family Heptapteridae that comprises catfishes of small and medium size. About 37 nominal species have been included in the genus since its description, and at least 14 were considered as valid in the checklist of catfishes provided by Ferraris (2007).

However, a recent phylogenetic analysis by Bockmann and Miquelarena (2008) redefined *Rhamdella* based on the following synapomorphies: a very large opening in the frontal for the exit of the epiphyseal branch (s6) of the supraorbital laterosensory canal; a larger optic foramen than the trigeminofacial nerve foramen and a dark stripe along the lateral surface of the body. They considered the genus to be composed of five species: *R. eriarcha* (Eigenmann & Eigenmann, 1888); *R. rusbyi* (Pearson, 1924); *R. longiuscula* Lucena & da Silva, 1991; *R. aymarae* Miquelarena & Menni, 1999 and *R. cainguae* Bockmann & Miquelarena, 2008. Later, Reis et al. (2014) described *R. zelimai*. Aditionally, Eschmeyer and Fricke (2015) included *Rhamdella exudans* (Jenyns, 1842), *Rhamdella jenynsii* (Günther, 1864) and *Rhamdella montana* (Eigenmann, 1913) as valid species of the genus.

Distributional information on *Rhamdella* species is scarce. No sympatry among species has been reported and their recorded distributions are mostly restricted. Only two species of the genus have been reported from Argentina: *R. aymarae* which is known from Itiyuro (Miquelarena and Menni 1999) and Urueña Rivers (Monasterio de Gonzo 2003), both in Salta province, northwestern Argentina and *R. cainguae*, which is known just from its type locality Cuña Pirú stream (Aristóbulo del Valle, Misiones, Argentina).

The aim of this note is to report the first record of *R. longiuscula* from Argentina and to extend the distribution range of *R. cainguae*.

Most of the specimens were collected by the authors in different streams of Misiones province in Argentina, using fishing rods and gillnets. The collecting sites are indicated at Figure 1. Specimens were fixed in a 10% formalin solution and conserved in 70% alcohol. Measurements were taken as straight line distances with a digital caliper following those of Lundberg and MacDade (1986).

The use of institutional codes follows Sabaj-Perez (2014).

Identification of specimens was made based on their original descriptions and considered the delimitation of the genus *Rhamdella* following Bockmann and Miquelarena (2008).

Rhamdella cainguae Bockmann & Miquelarena, 2008 (Figures 2 and 3).

Morphometric data are given in Table 1. This species is distinguished from the other species of the genus by the presence of a large ovoid and well differentiated area in the supraorbital laterosensory canal between the frontal and sphenotic bones (Figure 4). It also differs from *R. aymarae* and *R. longiuscula* by the branchiostegal membrane that does not reach the base of pectoral fin spine, eye diameter 20.6–23.9% HL vs. 11.5–17.3 and 22.5–29.4 respectively, and interorbital distance

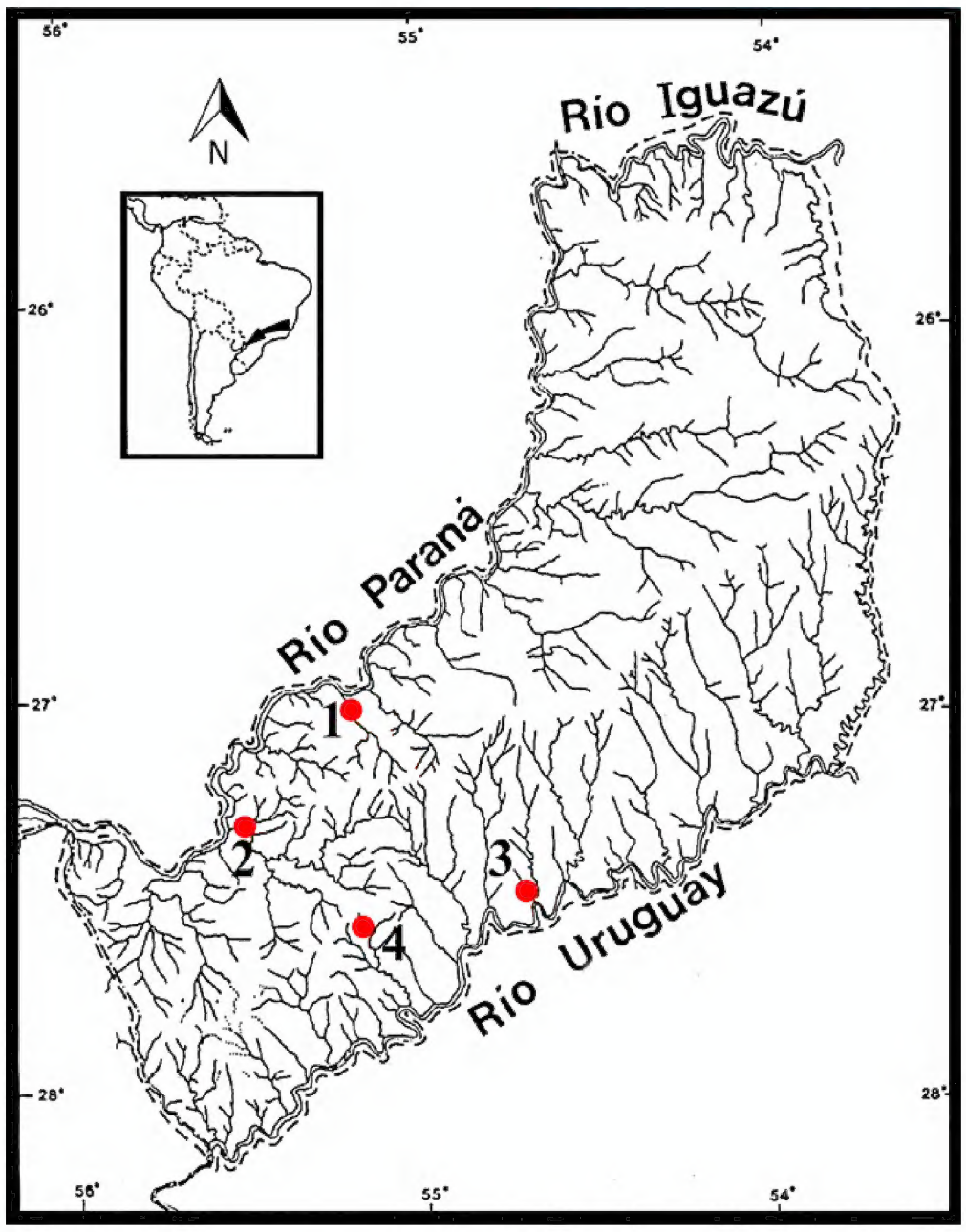

Figure 1. Map showing the collecting sites of *R. cainguae* and *R. longiuscula* from Misiones province. **1.** Tabay stream, Jardín América. **2.** Horqueta stream, San Ignacio. **3.** Shangay stream, Colonia Tres Bocas. **4.** Unnamed stream, Departamento Leandro N. Além.

Table 1. Morphometric data for *Rhamdella cainguae* (*n*=4).

	Range	Mean	SD
Standard length	80.5–118.17	*	*
Percents of Standard length			
Body depth	13.62–16.19	15.04	1.10
Body width	17.54–18.58	18.08	0.57
Prepectoral length	24.63–26.98	25.87	1.06
Predorsal length	36.10–37.52	36.81	0.64
Preventral length	47.13–50.11	48.86	1.25
Preanal length	61.06–65.24	63.40	1.76
Preadipose length	55.76–57.23	56.50	0.78
Length of pectoral spine	13.06–15.25	13.75	1.01
Length of dorsal spine	11.89–13.01	12.35	0.54
Length of ventral fin	15.06–16.30	15.71	0.51
Dorsal-fin base	12.63–14.71	13.32	0.94
Anal-fin base	14.77–17.94	16.49	1.39
Adipose-fin base	36.69–37.65	37.10	0.40
Caudal peduncle length	20.19–21.01	20.63	0.35
Caudal peduncle height	7.73–8.09	7.97	0.16
Adipose height	4.93–5.54	5.25	0.25
Distance dorsal-adipose	6.06–9.49	7.57	1.68
Urogen. papilla-anal-fin origin	2.84–3.77	3.08	0.46
Head width	16.81–18.86	17.75	0.85
Head length	24.79–25.74	25.15	0.41
Percents of Head length			
Bony interorbital width	17.73–19.06	18.28	0.61
Eye diameter	22.22–25.53	23.93	1.36
Head height	50.91–52.99	51.95	0.86
Mouth width	32.00–37.36	35.25	2.30
Snout length	37.41–41.28	39.74	1.62
Internarial length	19.40–20.13	19.87	0.32
Internarial width	16.88–19.55	17.83	1.19

Figures 2 and **3.** *Rhamdella cainguae*. **2**: LGE–P 47 (118.17 mm SL), lateral view. **3**: LGE–P 46 (105.44 mm SL), dorsal view.

Figure 4: *Rhamdella cainguae,* LGE–P 47 (118.17 mm SL), detail of the large ovoid and well differentiated area between the frontal and sphenotic bones. Scale bar = 5 mm.

Figure 5: Tabay stream, Jardín América, Misiones, Argentina.

17.9–20.3% HL vs. 31.0–44.9 and 12.8–17.7 respectively. The specimens considered herein were collected from Tabay (Figure 5) and Horqueta streams, Paraná River basin in Misiones province, Argentina.

Material examined: LGE-P 45: 1 ex., 114.4 mm, LGE-P 46: 1 ex., 105.44 mm and LGE-P 47: 1 ex., 118.17 mm; all from Tabay stream, Jardín América (26°59′ S, 055°10′ W), Coll.: M. Benitez and M. Sandrowicz, July 2014. CFA- IC 1215 (ex ILPLA 1604): 1 ex., 80.5 mm; Horqueta stream, San Ignacio (27°17′ S, 055°31′ W). Coll.: S. Koerber, R. Filiberto and J. Fernandez Santos, January 2001.

Rhamdella longiuscula Lucena & da Silva, 1991 (Figures 6 and 7).

Morphometric data are given in Table 2. This species differs from *R. cainguae* and *R. aymarae*, also present in Argentina, by the dorsal profile of the snout convex vs. slightly convex in *R. cainguae* and almost straight in *R. aymarae*, larger eye diameter 22.5–29.4% HL vs. 20.6–23.9 and 11.5–17.3 respectively, and lesser interorbital distance 12.8–17.7% HL vs. 17.9–20.3 and 31.0–44.9 respectively. Additionally, *R. longiuscula* differs from *R. aymarae* by the interdorsal distance 6.4–11.3 vs. 16.8–23.4% SL and from *R. cainguae* by the extension of its branquiostegal membrane that reaches the pectoral spine (Figure 8). The specimens considered herein were collected in Shangay and an unnamed stream (Figure 9), Uruguay River basin at Misiones province.

Figures 6 and **7.** *Rhamdella longiuscula*. **6:** MLP 10902 (112.5 mm SL), lateral view. **7:** MLP 10903 (60.7 mm SL), dorsal view.

Table 2. Morphometric data for *Rhamdella longiuscula* (*n*=2).

	Range	Mean	SD
Standard length	60.75–112.51	*	*
Percents of Standard length			
Body depth	16.81–18.04	17.46	0.82
Body width	17.45–17.58	17.51	0.09
Prepectoral length	23.22–25.68	24.45	1.74
Predorsal length	35.26–37.22	36.24	1.39
Preventral length	46.64–47.80	47.22	0.82
Preanal length	61.11–62.67	61.89	1.10
Preadipose length	56.15–56.80	56.48	0.46
Length of pectoral spine	11.51–13.88	12.69	1.68
Length of dorsal spine	10.65–12.27	11.46	1.14
Length of ventral fin	15.85–16.16	16.01	0.22
Dorsal-fin base	14.11–14.75	14.43	0.45
Anal-fin base	18.49–20.46	19.47	1.40
Adipose-fin base	36.56–37.86	37.21	0.92
Caudal peduncle length	19.11–19.26	19.18	0.11
Caudal peduncle height	7.98–8.64	8.31	0.46
Adipose height	5.06–5.47	5.26	0.29
Distance dorsal-adipose	6.47–8.04	7.26	1.11
Urogen. papilla-anal-fin origin	3.73–3.57	3.65	0.11
Head width	17.78–18.52	18.15	0.52
Head length	24.51–25.48	25.00	0.68
Percents of Head length			
Bony interorbital width	16.34–17.44	16.89	0.78
Eye diameter	23.86–27.52	25.69	2.59
Head height	48.62–49.16	48.89	0.38
Mouth width	34.63–34.66	34.64	0.03
Snout length	38.18–39.52	38.85	0.95
Internarial length	15.63–18.38	17.01	1.94
Internarial width	19.51–20.61	20.06	0.78

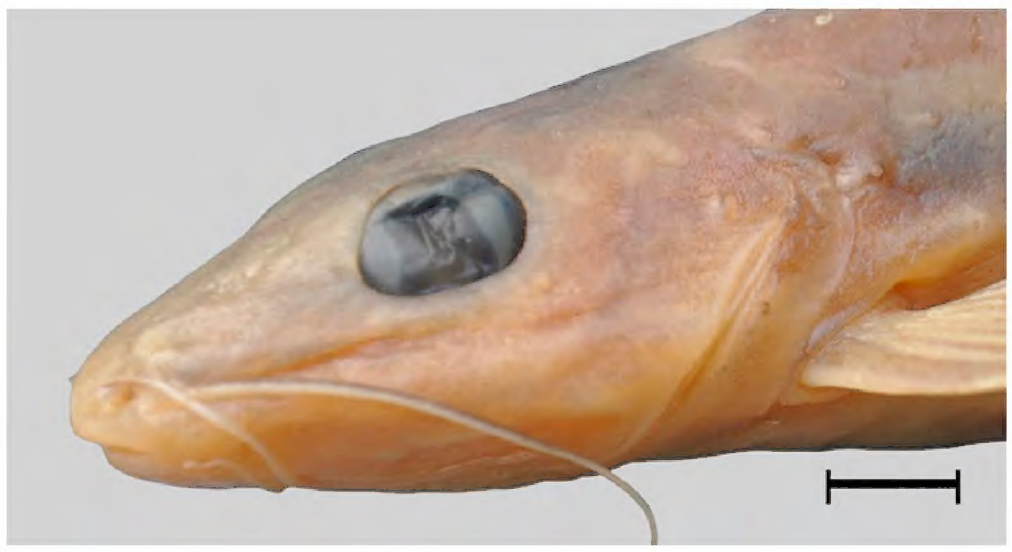

Figure 8. *Rhamdella longiuscula*, MLP 10902 (112.5 mm SL), detail of branquiostegal membrane. Scale bar = 5 mm.

Figure 9. Shangay stream, Colonia Tres Bocas, Departamento 25 de Mayo, Misiones, Argentina.

Material examined: MLP 10902: 1 ex., 112.5 mm, Shangay stream, Colonia Tres Bocas, Departamento 25 de Mayo (27°29′ S, 054°40′ W), Coll: A. Almirón and J. Casciotta, April 2000. MLP 10903: 1 ex., 60.7 mm, unnamed stream, Departamento Leandro N. Alem (27°38′ S, 055°12′ W), Coll: A. Almirón and J. Casciotta, April 2000.

Most of the species of the genus *Rhamdella* usually have restricted distributions. The type material of *R. cainguae* comes from Cuña Pirú and Tateto streams, both in Aristóbulo del Valle, Misiones, Argentina. Here we report the presence of *R. cainguae* in streams not connected to Cuña Pirú, but both being part of Paraná basin. Thus, we document the extension of the distribution range of this species 39 km northwest and 71 km southwest suggesting that it is not a very restricted endemism.

Rhamdella longiuscula is distinctly widespread compared with its congeners. In recent years, it was reported from some new localities in República Oriental del Uruguay (Santa Lucia and Negro Rivers and Merín Lake) by Texeira de Mello et al. (2011) and Serra et al. (2014), but the records of this species from the Shangay and the unnamed streams constitute the first from Argentina.

It is interesting that, in its original description, *Rhamdella longiuscula* was considered to inhabit middle Uruguay River basin and this concept was replicated by subsequent authors (Bockmann and Guazzelli in Reis et al. 2003; Ferraris 2007; Texeira de Melo et al. 2011; Serra et al. 2014). We adopt the delimitation proposed by Piálek et al. (2012), which considers Moconá Falls (Saltos del Moconá, Saltos de Yucumã) and Salto Grande Falls (today replaced by the Salto Grande Dam) as the delimitation between the Upper and Middle and the Middle and Lower Uruguay River respectively. So, based on all available data, we consider *R. longiuscula* as distributed in the whole Uruguay River basin.

ACKNOWLEDGEMENTS

We thank to CONICET and CIC for financial support and to Universidad Nacional de Misiones and Universidad Nacional de La Plata for permanent support. We are grateful to anonymous reviewer for suggestion to the manuscript.

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Author contributions: MB, AA and JC, collected the specimens; MB, AA, JC and MA made the analysis and wrote the text.

Received: 11 October 2015
Accepted: 10 January 2016
Academic editor: Tiago P. Carvalho